Snoqualmie River Basin
Tuck Creek Basin
NE Woodinville Duvall Rd.
Cherry Creek Basin
NE Cherry Valley Rd.
Cherry Creek
DUVALL
203
Harris Creek
Harris Creek Basin
Carnation Duvall l Rd.
Snoqualmie River
West Snoqualmie Valley Rd. NE
Ames Creek
Ames Creek Basin
Patterson Creek Basin
Snoqualmie River Basin
CARNATION
Tolt River
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Figure 24.

SNOQUALMIE RIVER SURVEY: Riparian Vegetation - Trees

Map 1 of 2

N

21 River Miles
Minor Roads
Major Roads
DNRP Basin Boundary
Incorporated Areas

All Deciduous
DECIDUOUS, NON-DENSE
DECIDUOUS, DENSE

≤ 30% Coniferous
CONIFEROUS, NON-DENSE
CONIFEROUS, DENSE

>30% Coniferous
CONIFEROUS, NON-DENSE
CONIFEROUS, DENSE

0 0.5 1 2 3 4 Miles

King County
Department of Natural Resources and Parks
Water and Land Resources Division

DATA SOURCE NOTES:
Large Woody Debris: KC DNRP & Washington Trout survey, 2000
Waterbodies: KC DNRP & WA DOE Hydrography Project, 1997
River Miles: Generated from waterbody routes in waterbody layer
Basin Boundaries: KC DNRP Basin Planning, 1997

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CARNATION

SNOQUALMIE

24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42

Tolt River

Griffin Creek

Griffin Creek Basin

Tokul Creek Basin

Tokul Creek

Snoqualmie River Basin

Patterson Creek

Redmond Fall City Rd.

Raging River

Raging River Basin

I 90 FWY

203 202

Figure 25.

SNOQUALMIE RIVER SURVEY: Riparian Vegetation - Trees

Map 2 of 2

N

21 River Miles
Minor Roads
Major Roads
DNRP Basin Boundary
Incorporated Areas

All Deciduous
DECIDUOUS, NON-DENSE
DECIDUOUS, DENSE

≤ 30% Coniferous
CONIFEROUS, NON-DENSE
CONIFEROUS, DENSE

>30% Coniferous
CONIFEROUS, NON-DENSE
CONIFEROUS, DENSE

0 0.5 1 2 3 4 Miles

King County
Department of Natural Resources and Parks
Water and Land Resources Division

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The deciduous and coniferous tree species found in 2000 were similar to the species noted in approximately 1870, but the distribution and size differed. Historically, conifers accounted for 7% of streamside trees and 43% of the streamside biomass. In 2000, fewer than 7% of streamside trees were conifers, and both conifers and deciduous trees were smaller (Collins and Sheikh, 2002). Whereas the average stem diameter (diameter at breast height) of cedar, spruce, maple, and cottonwood trees was greater than 50 centimeters prior to Euro-American settlement, the average diameter of these trees is now less than 30 centimeters; moreover, there are few mature trees (average stem diameter greater than 50 centimeters) downstream of Fall City.

The *Salmonid Species Habitat Conditions Review* (Snohomish Basin Salmonid Recovery Technical Committee, 2002) rates the Snoqualmie River as "degraded" for riparian zone and shoreline vegetation because the average stem diameter is less than 30 centimeters (Point No Point Treaty Council and WDFW, 1999). The Snohomish Basin Salmonid Recovery Technical Committee used the concept of one site potential tree height to evaluate the riparian zone. Riparian zone refers to the channel migration zone or OHWM, plus the horizontal distance of one site potential tree height which is the height that a tree could potentially grow to on a particular site (NOAA, 1996). Overall, mature trees are now found along only 1.8% of river miles on the LB and 9% of river miles on the RB of the mainstem Snoqualmie. Conversion of forestland to agricultural and residential land is responsible for this low figure. Loss of riparian vegetation results in decreased riverbank stability, excessive erosion, and reduction of shading which in turn leads to higher water temperatures. A lack of riparian vegetation also limits habitat for a wide variety of wildlife species and insects, on which fish feed. Loss of mature trees in the riparian zone also decreases LWD recruitment into the river, thus reducing the structural and hydraulic complexity of instream habitat. All of these factors combine to adversely affect freshwater life history stages of salmonids and to reduce biological diversity.

Large Woody Debris (LWD)

Instream LWD is an important component of salmonid habitat. By providing cover for fish, LWD protects them from predators and from high, scouring flows. Water scouring around LWD also carves out pools, which provide rearing habitat for juvenile fish and prespawning holding habitat for adults. LWD also delivers sediment and nutrients to aquatic ecosystems and provides structural complexity to river channels, with resulting biological diversity.

Figures 26 to 31 show the location and type of LWD (cut logs, debris jams, logs with rootwads, and rootwads on stumps) found in the Snoqualmie River in the summer of 2000, and indicate whether each piece was above, across, or below the OHWM. Wood embedded in the river channel was included. Because the habitat inventory was conducted during low flow and generally good water clarity conditions, subsurface LWD was observed as well as LWD on the surface of the water and on the riverbanks. A piece of wood was considered to be LWD if it was at least two meters in length and 10 centimeters in diameter (Schuett-Hames et al., 1999; Washington Forest Practices Board, 1997).

The commonest type of LWD observed was the log with rootwad combination. The field team found more LWD in the Snoqualmie River than expected. Concentrations were relatively high between RM 17-21 and RM 24.5-27. However, the summer 2000 inventory still revealed an overall paucity of LWD in the Snoqualmie River. The *Salmonid Species Habitat Conditions Review* (Snohomish Basin Salmonid Recovery Technical Committee, 2002) rates the Snoqualmie River as "degraded" for LWD because there was less than one piece of LWD per 20 meters of river channel (WDFW and Western Washington Treaty Tribes, 1997; Washington Forest

Practices Board, 1997). The field team found 822 pieces of LWD in 32 miles; this translates to an average of 25.7 pieces per mile (1624.6 meters) and 0.32 piece per 20 meters of channel.

Although there were a few locations (e.g., downstream of the Tokul Creek confluence) where large alder and cedar trees were leaning over the river and were potential near-term sources of LWD, in general the degraded shoreline vegetation results in low recruitment of LWD to the Snoqualmie River. Much of the existing LWD appeared to be old, indicating that there had not been recent significant recruitment. Native plant revegetation projects may help to ameliorate this situation in the long-term, once the trees are large enough to restore the natural ecosystem process of LWD recruitment. There may also be opportunities to reintroduce LWD into the river at certain locations as an interim habitat restoration measure until planted trees mature and begin contributing significant volumes of wood to the channel.

Snoqualmie River Basin

6

7

8

9

10

11

203

NE Cherry Valley Rd.

DUVALL

Snoqualmie River Basin

Figure 26.

SNOQUALMIE RIVER SURVEY: Large Woody Debris

Map 1 of 6

N

21 River Miles
Minor Roads
Major Roads
DNRP Basin Boundary
Incorporated Areas

Cut Log > 15 Ft. Long
- Above OHWM
- Across OHWM
- Below OHWM

Debris Jam
- Above OHWM
- Across OHWM
- Below OHWM

Log with Rootwad
- Above OHWM
- Across OHWM
- Below OHWM

Rootwad on Stump
- Across OHWM
- Below OHWM

0 0.1 0.2 0.3 0.4 Miles

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Department of Natural Resources and Parks
Water and Land Resources Division

DATA SOURCE NOTES:

Large Woody Debris: KC DNRP & Washington Trout survey, 2000
Waterbodies: KC DNRP & WA DOE Hydrography Project, 1997
River Miles: Generated from waterbody routes in waterbody layer
Basin Boundaries: KC DNRP Basin Planning, 1997

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11
12
13
14
15
16
17
18
19
203
Snoqualmie River
Carnation Duvall Rd.
West Snoqualmie
Snoqualmie River Basin

Figure 27.

SNOQUALMIE RIVER SURVEY: Large Woody Debris

Map 2 of 6

N

21 River Miles
Minor Roads
Major Roads
DNRP Basin Boundary
Incorporated Areas

Cut Log > 15 Ft. Long
- Above OHWM
- Across OHWM
- Below OHWM

Debris Jam
- Above OHWM
- Across OHWM
- Below OHWM

Log with Rootwad
- Above OHWM
- Across OHWM
- Below OHWM

Rootwad on Stump
- Across OHWM
- Below OHWM

0 0.1 0.2 0.3 0.4 Miles

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Water and Land Resources Division

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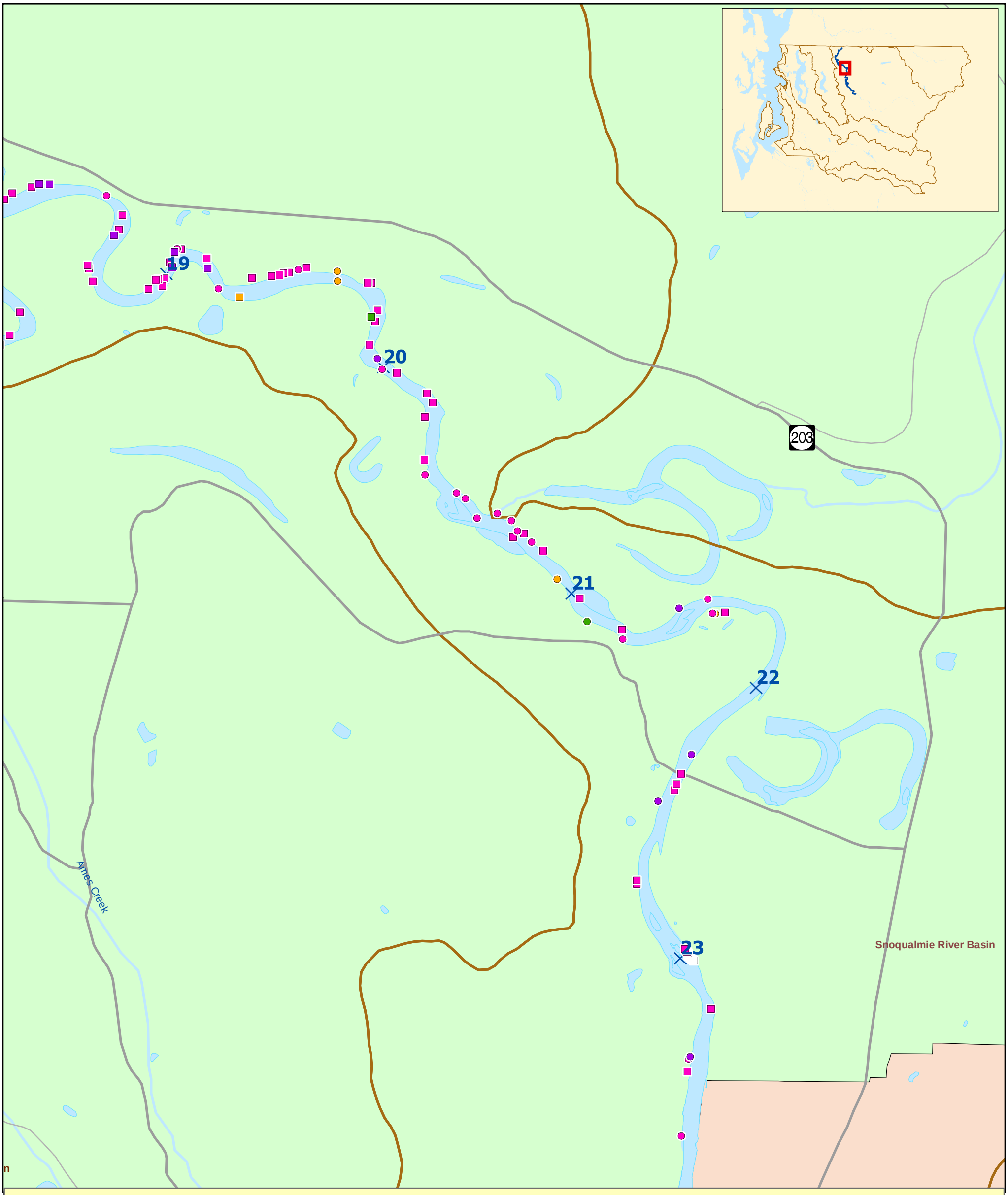

Figure 28.

SNOQUALMIE RIVER SURVEY: Large Woody Debris

Map 3 of 6

N

21 River Miles
Minor Roads
Major Roads
DNRP Basin Boundary
Incorporated Areas

Cut Log > 15 Ft. Long
- Above OHWM
- Across OHWM
- Below OHWM

Debris Jam
- Above OHWM
- Across OHWM
- Below OHWM

Log with Rootwad
- Above OHWM
- Across OHWM
- Below OHWM

Rootwad on Stump
- Across OHWM
- Below OHWM

0 0.1 0.2 0.3 0.4 Miles

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Department of Natural Resources and Parks
Water and Land Resources Division

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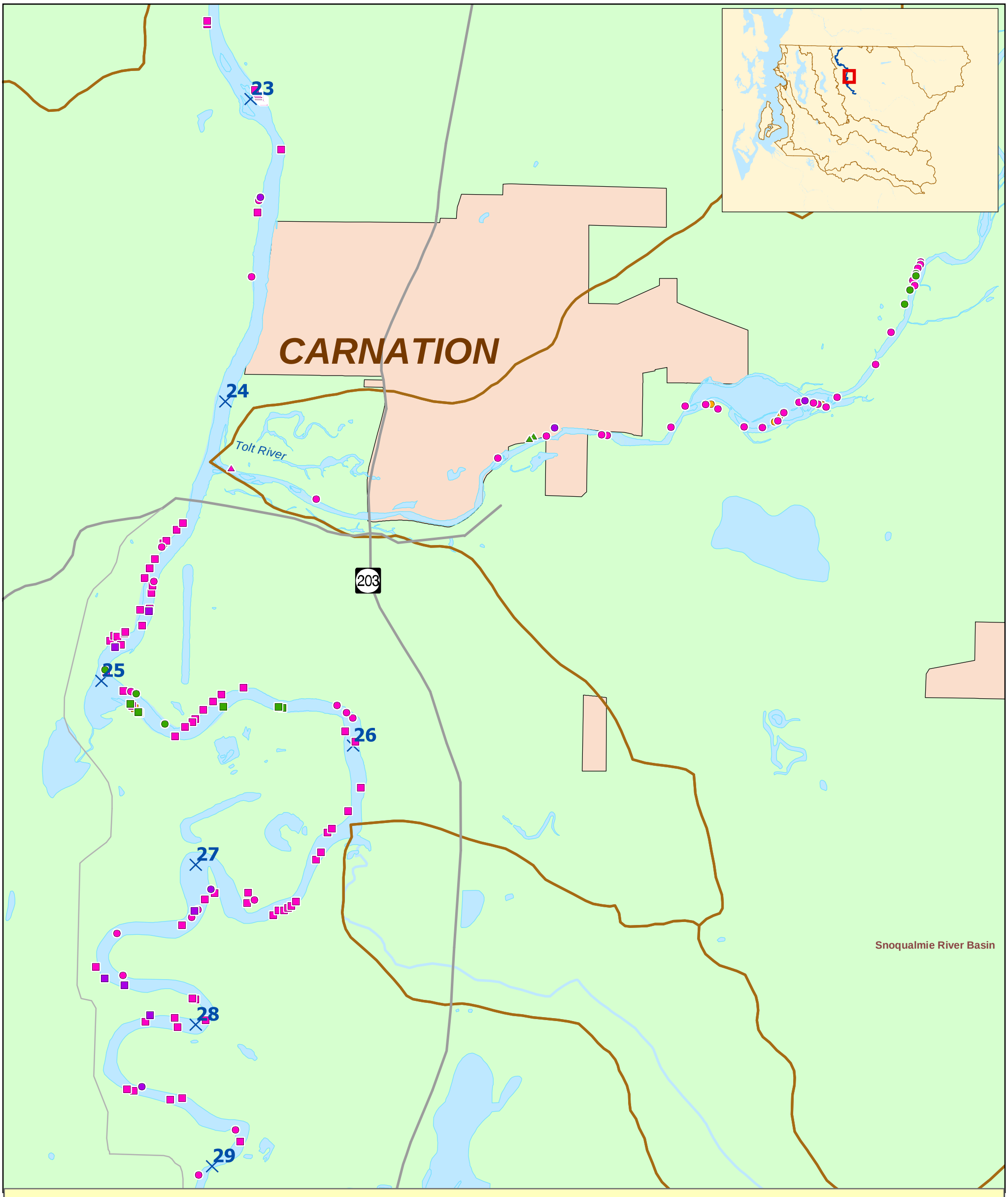

Figure 29.

SNOQUALMIE RIVER SURVEY: Large Woody Debris

Map 4 of 6

N

21 River Miles
Minor Roads
Major Roads
DNRP Basin Boundary
Incorporated Areas

Cut Log > 15 Ft. Long
- Above OHWM
- Across OHWM
- Below OHWM

Debris Jam
- Above OHWM
- Across OHWM
- Below OHWM

Log with Rootwad
- Above OHWM
- Across OHWM
- Below OHWM

Rootwad on Stump
- Across OHWM
- Below OHWM

0 0.1 0.2 0.3 0.4 Miles

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Department of Natural Resources and Parks
Water and Land Resources Division

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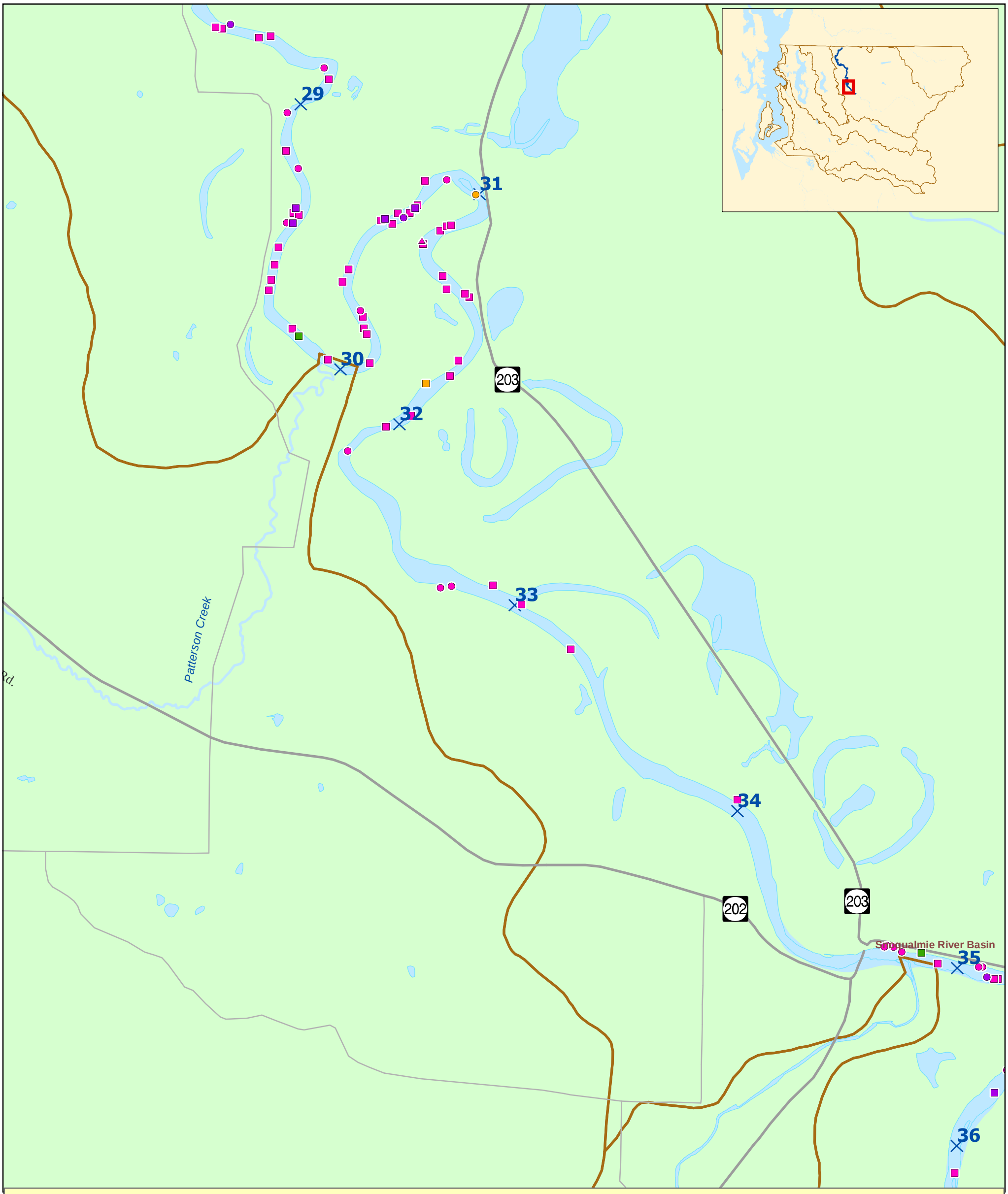

Figure 30.

SNOQUALMIE RIVER SURVEY: Large Woody Debris

Map 5 of 6

N

21 River Miles
Minor Roads
Major Roads
DNRP Basin Boundary
Incorporated Areas

Cut Log > 15 Ft. Long	Debris Jam	Log with Rootwad	Rootwad on Stump
Above OHWM	Above OHWM	Above OHWM	Across OHWM
Across OHWM	Across OHWM	Across OHWM	Below OHWM
Below OHWM	Below OHWM	Below OHWM	

0 0.1 0.2 0.3 0.4 Miles

King County
Department of Natural Resources and Parks
Water and Land Resources Division

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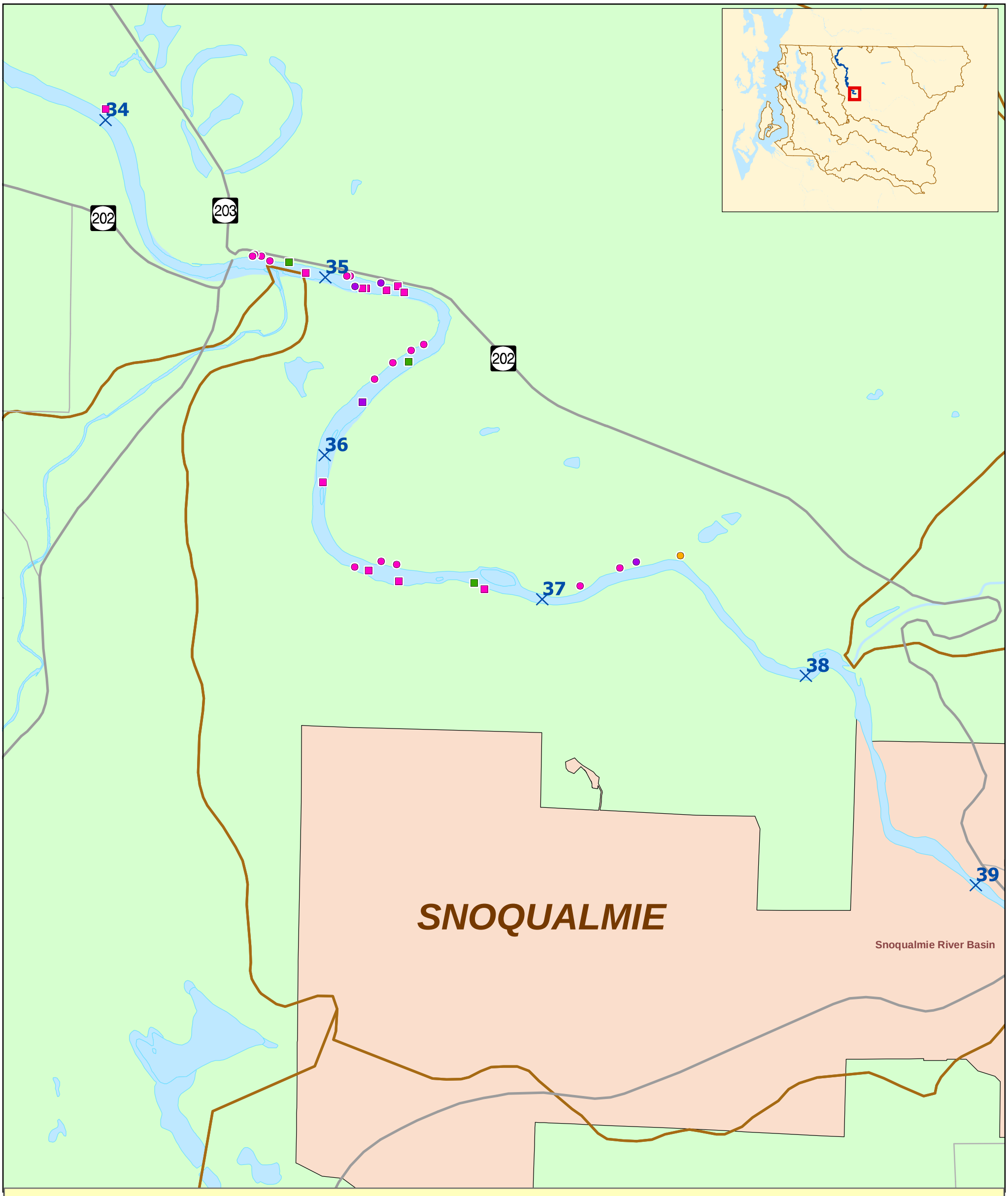

Figure 31.

SNOQUALMIE RIVER SURVEY: Large Woody Debris

Map 6 of 6

N

21 River Miles
Minor Roads
Major Roads
DNRP Basin Boundary
Incorporated Areas

Cut Log > 15 Ft. Long	Debris Jam	Log with Rootwad	Rootwad on Stump
Above OHWM	Above OHWM	Above OHWM	Across OHWM
Across OHWM	Across OHWM	Across OHWM	Below OHWM
Below OHWM	Below OHWM	Below OHWM	

0 0.1 0.2 0.3 0.4 Miles

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Department of Natural Resources and Parks
Water and Land Resources Division

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